COMMONWEALTH of VIRGINIA

DEPARTMENT OF TRANSPORTATION
731 Harrison Ave., P.O. Box 3071
Salem, VA 24153-0560

CHARLES A. KILPATRICK, P.E.
COMMISSIONER

March 7, 2014

Ms. Tara Pattisall
Roanoke County Community Development Department
P.O. Box 29800
Roanoke, VA 24018

RE: SUP-C1
Roanoke County
Corporate Property Services, Inc (Chick-Fil-A)
Proposed Land Use – Restaurant with drive-thru
Route 460, Challenger Avenue

Dear Ms. Pattisall,

We have reviewed the above mentioned special use request and have the following comments:

1. The proposed development will generate more traffic than the existing parcel as it currently exists.
2. If deemed necessary, any required improvements to the adjacent roadways or signalized intersections will be the sole responsibility of the developer.
3. The VDOT Road Design Manual, Appendix F: Access Management Design Standards for Entrances and Intersections must be adhered to where applicable for commercial entrances. This includes but is not limited to commercial entrance spacing and intersection sight distance. The proposed entrance does not appear to meet intersection sight distance looking to the left. The intersection sight distance must be field verified and measures taken to ensure the minimum required distance can be met.
4. A Land Use Permit will be required for any proposed construction within VDOT rights-of-way. Information regarding any changes to the existing drainage system should also be included for review.

Traffic Impact Analysis Comments:

1. Page 10 – Table 5.1 – Clarify how the PM Peak Hour Trip Generation is determined.
2. Figure 5.2: Traffic distribution shows 5% of the traffic coming out of W. Ruritan Road would go through to CVS. This assumption is not consistent with the distribution percentage provided in Table 3.1. Based on the assumptions provided in Table 3.1, traffic should be distributed along Route 460 (eastbound and westbound directions). Please revise.

3. AM Peak Hour trips leaving the site add up to 117 (Figure 5.4), which is 10 more than the 107 exiting trips as stated in Page 11, Table 5.2 – Peak Hour Trip Generation. Please revise to match the trip generation as stated in Table 5.2.
4. Pages 16-18: Double check and compare the pass-by trips depicted in pages 16-18 based on the pass-by trip adjustment in section 5.1.
5. Page 21: The through volumes on Challenger Avenue westbound approach and the left turn volumes on West Ruritan Road southbound approach at the intersection of Challenger Avenue and West Ruritan Road appears to be incorrect for the December 2014 Buildout PM Peak hour traffic volumes. Please double check.
6. For existing, background and build out conditions in Synchro, please check the taper lengths for the eastbound approach of Challenger Avenue at the intersection of Valley Gateway Boulevard, all turning approaches at the intersection of Challenger Avenue and West Ruritan Road and at the intersection of Challenger Avenue and Blue Hills Drive. These are set to a default length of 25 feet.
7. Page 25 – Double check the page number for left turn warrants from Road Design Manual. Is Appendix E or F from the Road Design Manual followed for left turn warrants? Please confirm.
8. For HCM reports based on Synchro, it is suggested that the peak hour factor (PHF) be based on the approach PHF, not the movement PHF. Also, for the westbound U-turn at the intersection of Route 460 and Blue Hills Drive, a default PHF of 0.92 was used. Revise the PHF for U-turns for other intersections also for all scenarios. Also, please use the most recent HCM 2010 methodology for Synchro. If in case, HCM 2010 cannot be used, HCM 2000 can be used. Please revise. According to the Traffic Operations Analysis Tool Guidebook, version 1.1, page 50: **"Peak Hour Factors: PHF should be determined by approach based on existing traffic count data."** Also, for future scenarios, please use a PHF of 0.92 or higher.
9. Consider coordinating and optimizing offset, splits, and cycle length for all three signalized intersections even though Blue Hills Drive is controlled by the City of Roanoke for modified Build conditions. SWRO will coordinate with City of Roanoke with the timing outputs obtained from Synchro outputs for AM, Midday, and PM peak hours. Provide offset "0" at Valley Gateway Boulevard considering it is the first intersection in the corridor and optimize the offsets for other two intersections. Please provide signal timing outputs as well from the Synchro analysis.
10. Provide maximum queues instead of 95th percentile queues based on SimTraffic outputs.
11. Maximum queues for the westbound right turning movement are longer than the existing storage length. Therefore, a longer storage is needed to accommodate the right turn queues. Increase the storage length so that right turn queues do not block the outside westbound through lane and/or the outside through lane do not block the right turn pocket.
12. The delay for the southbound approach at the intersection of Route 460 and West Ruritan Road does not match the HCM outputs for the February 2014 MID existing conditions. Revise.
13. The delay for the left & U-turn at the eastbound approach of Challenger Avenue at the intersection of West Ruritan Road does not match the HCM outputs for the December 2014 PM build out. Revise.
14. The approach delay for the eastbound approach at the intersection of Challenger Avenue and West Ruritan Road does not match the HCM outputs for the 2020 Design & 2020 Design modified midday conditions. Revise.
15. Page 25: While the data in Table 6.1 do not meet the warrant for a left turn lane, an engineering judgment should also be considered for a need of a left turn lane. Since the proposed entrance is less than 215 feet away from the signalized intersection at Route 460, it takes less than nine cars to spillback to the intersection. Therefore, consideration

should be given for left turn lane on W. Ruritan Road in the northbound direction to make turns onto the proposed development.

16. The corner clearance shown in base plan submitted with AM-E form should be revised. Please refer to Figure 1-5, VDOT Road Design Manual Appendix F for corner clearance.
17. Conclusions and Recommendations: Changes in speed limit require strong justification based on safety and operational data. Speed limits are not changed to accommodate or lessen the requirements for site access. In addition, the operational speed data included in the TIA provide support to the current posted speed limit of 35 MPH. Therefore, the site access should be designed to a minimum operating speed of 35 MPH.

Should you have any questions, please do not hesitate to call. Thank you.

Sincerely,

Brian K. Blevins, P.E.
Area Land Use Engineer
VDOT, Salem District Transportation and Land Use

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